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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,786	10/24/2003	Guo-Xin Jin	2002B181B	2340

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EXXONMOBIL CHEMICAL COMPANY
5200 BAYWAY DRIVE
P.O. BOX 2149
BAYTOWN, TX 77522-2149

EXAMINER	
PASTERCZYK, JAMES W	
ART UNIT	**PAPER NUMBER**
1755	

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/693,786	JIN ET AL.	
	Examiner	Art Unit	
	J. Pasterczyk	1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 7-33* is/are pending in the application.

4a) Of the above claim(s) *17-19,21 and 22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-16,20 and 23-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-4 and 7-33* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This Office action is in response to the RCE filed 9/26/06. The prior art rejections made during prosecution of the parent case are withdrawn in favor of those made below, although all of the applied art was already of record. The Jin reference is withdrawn due to the filing of a suitable Rule 132 declaration.

2. Applicants requested clarification of the restriction requirement made in the prosecution of this case. Said restriction requirement is found in the first Office action mailed 12/5/05, paragraphs 1-4, in which Catherine Bell, Esq., elected with traverse the invention of the catalyst in combination with a monomer, the catalyst and monomer being polymerizable by free radical polymerization. Prosecution continues herein on that invention.

3. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: there is not a single subscript in the entire specification, even though it is filled with chemical formulae.

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 30-33 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. Claims 30-33 are drawn to metals of groups 3 and 5-10 of the periodic table. However, from the structures drawn in claim 30, these metals must be in the 4+ oxidation state. Group 3 metals are not capable of achieving this oxidation state since they have insufficient valence electrons to do so. For group 5 and higher metals, the structures as

drawn would violate the 18 electron rule of organometallic chemistry since each L ligand would donate 5 electrons and each D and E ligand would donate one electron to the metal's valence d orbitals which would already be populated by at least 5 electrons from the metal atom itself, resulting in at least 17 electrons in the frontier orbitals of the metal compound. There would need to be an unfilled valence orbital on the metal compound into which the pi electrons of an olefin molecule would be capable of donating, but when the olefin donates these two pi electrons, the electron count on the metal compound would exceed 18, meaning antibonding orbitals of the metal compound would begin being populated, resulting in weakening and likely even breaking of metal-ligand bonds. Such a compound would not be capable of carrying out the olefin polymerization process envisioned for the presently-claimed compositions. In addition, the examiner notes that all the working examples in the specification are drawn to group 4 metals; no other metal is exemplified, likely because it is inoperable.

6. Claims 30-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As noted in paragraph 5 above, the metals required for the catalyst compound would be either in an oxidation state they cannot attain, or the compounds would exceed the 18 electron rule and thus not be capable of more than fleeting existence.

7. Claims 20, 24 and 30 are objected to because of the following informalities: in claim 20, if TM may only be titanium, it would be far less ambiguous to simply change the symbol in

the structures to Ti. In claim 24, l. 4 recites "one of the formulas", yet only one formula is given. In claim 30, in part (a), delete the commas after "Group 3". Appropriate correction is required.

8. Claims 14, 15, 16, 18, 19, 20, 23 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 14 and 15, the conjunction between the last two members of the closed Markush groups should be --and--, not "or".

In claim 16 it is not clear to which group of initiators of claim 15 the persulfates belong, hence it appears as if this member of the group is inconsistent with claim 15.

In claims 18 and 19, end of first line of each, after "selected from" insert --the group consisting of-- for consistent closed Markush language.

In claim 20, the first line of the (b) recitation should read --(b) each R, R', and R" is independently hydrogen or a hydrocarbyl--.

In claims 23 and 30, the recitation of (c) (ii) makes the second and third formulas identical and hence redundant, thus perhaps the third formula should simply be canceled.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-4, 7-16, 20 and 24-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Schertl et al., USP 5,770,755 (hereafter referred to as Schertl).

Schertl discloses a polymeric metallocene catalyst composition made using a combination of a metallocene having a polymerizable side group and an olefin (abstract; col. 1, l. 60 to col. 2, l. 26; col. 3, l. 8-50; col. 4, l. 35-67; col. 6, l. 25-35; examples).

Schertl lacks disclosure that the composition is made by polymerizing the finished metallocene with or without the presence of the comonomer, instead disclosing making a polymeric cyclopentadienyl ligand first, then reacting this composition with a transition metal compound to make the polymeric metallocene.

However, the current claims are couched in product-by-process language, hence the finished product appears to be identical to that of the prior art.

Since the prior art appears to describe and teach the invention as claimed on the basis of inherent property characteristics which either anticipate or render obvious the claimed invention, an alternative 102/103 rejection is deemed appropriate, and the burden of proof that it does or does not falls to applicants as in *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

12. Claims 1-4, 7-16, 20 and 23-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schertl as cited above.

The disclosure of Schertl has been discussed above.

Schertl lacks disclosure of more than one metallocene compound being in the polymerized catalyst product.

However, such a modification is well within the skill of the routineer in the art.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Schertl with a reasonable expectation of obtaining a highly-useful polymeric catalyst compound with the expected benefit of the catalyst not fouling the reactor.

13. Claims 1-4, 7-16, 20 and 24-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antberg et al., USP 5,169,818 (hereafter referred to as Antberg).

Antberg discloses a polymeric metallocene compound having as comonomer an olefin, the composition being made by copolymerizing metallocenes with olefinic side groups and olefins using free radical initiators as the catalysts for polymerization (abstract; col. 2, l. 1 to col. 6, l. 35).

Antberg lacks disclosure of the use of titanium as the metal for the metallocenes.

However, the metals Antberg uses are hafnium and zirconium, the other two members of group 4 of the periodic table.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Antberg with a reasonable expectation of obtaining a highly-useful olefin polymerization catalyst with the expected benefit of the catalyst being insoluble in ordinary organic solvents.

14. Claims 1-4, 7-16, 20 and 24-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antberg as cited above in view of Schertl as cited above.

The disclosure of Antberg has been discussed above.

Antberg lacks disclosure of titanium as the metal in the metallocene compounds.

However, Schertl teaches that titanium is useable as the metal in polymeric metallocenes (col. 6, l. 25-28).

It would have been obvious to one of ordinary skill in the art to apply the teaching of Schertl to the disclosure of Antberg with a reasonable expectation of obtaining a highly-useful olefin polymerization catalyst with the expected benefit of the catalyst being more economical to prepare as well as not fouling olefin polymerization reactors.

15. Claims 1-4, 7-16, 20 and 23-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antberg as cited above in view of Chabrand et al., USP 5,714,425 (hereafter referred to as Chabrand).

The disclosure of Antberg has been discussed above.

Antberg lacks disclosure of the use of plural metallocene compounds in its polymeric metallocene catalyst.

However, Chabrand teaches that such a modification is conventional in the art (col. 4, l. 64 to col. 5, l. 20).

It would have been obvious to one of ordinary skill in the art to apply the teaching of Chabrand to the disclosure of Antberg with a reasonable expectation of obtaining a highly-useful olefin polymerization catalyst with the expected benefit of the polymers made using the catalysts having good processability.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Pasterczyk whose telephone number is 571-272-1375. The examiner can normally be reached on M-F from 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J. Pasterczyk

AU 1755

10/12/06

J. A. LORENGO
SUPERVISORY PATENT EXAMINER